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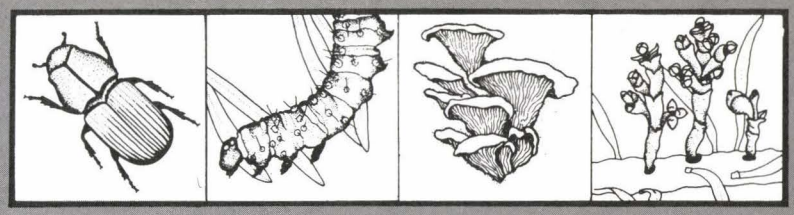

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A DWARF MISTLETOE PLAN FOR THE FLATHEAD INDIAN RESERVATION 1989-1994

by Tom Corse, Ken Trickey, and Jim Byler

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EXPERIMENT STATION

United States Department of Agriculture

Forest Service

Northern Region

P.O. Box 7669
Missoula, Montana
59807

ABSTRACT

Dwarf mistletoes still pose management problems on the Flathead Reservation. This paper describes a management program, to be conducted in conjunction with the silvicultural program, which will help reduce the impact of dwarf mistletoe on Douglas-fir, western larch, and lodgepole pine. The program covers fiscal years 1989 through 1994.

FOREST MANAGEMENT BACKGROUND

Dwarf mistletoe infested timber stands on the Flathead Reservation remain a concern. More than two thirds of the Douglas-fir, western larch, and lodgepole pine stands have some mistletoe. Presence and severity of infections have a significant effect on management and silvicultural planning.

Past efforts to control dwarf mistletoe were based on the premise that visible infections could be seen and removed and residual infestations would be reduced to acceptable levels. To determine which stands to treat, a simple mistletoe stand rating system was devised. It was based on the intensity of the infestation in both the overstory and the understory. The combinations of high and low infestations in each of the stories resulted in four classes, ranging from Class I with heavy infestations in both stories to Class IV with low infestations in both stories. Many thousands of acres were treated under this system.

Unfortunately, the premise that visible infections indicated the actual levels of infection for the stand proved incorrect. Subsequent observations found that stands treated by removing visible mistletoe infections soon showed similar levels of infection as those that existed before treatment. A study conducted by foresters from the BIA and a pathologist from Timber, Cooperative Forestry and Pest Management found that even intense efforts to identify infections from the ground resulted in as high as 40% undetected infections in the residual stand. These findings and evaluations have led to the modification of the dwarf mistletoe management plan as follows.

STAND RECONNAISSANCE AND STRATIFICATION

During the pre-sale phase of timber sale preparation, management and silvicultural prescriptions are developed through stand examination by staff foresters. The presence of mistletoe is often a prime consideration in the prescription making process.

The information gathered during stand reconnaissance is sufficient to complete environmental analysis and appraisal, and plan post-sale timber stand improvement projects, including mistletoe control. Before logging, those areas selected for mistletoe control are re-examined, mistletoe surveys conducted, stand specific cutting prescriptions prepared. Unit boundaries are placed on the ground, and the work accomplished following logging.

The second examination serves to fine tune the thinning and mistletoe control prescription and allows each prescription to account for actual conditions present after logging.

BIOLOGICAL EVALUATION

The Reservation contains 322,000 acres of commercial forest land, of which about 206,000 acres (64 percent) support Douglas-fir, western larch, and lodgepole pine timber types. Dwarf mistletoes (Arceuthobium douglassii on Douglas-fir, A. laricis on western larch, and A. americanum on lodgepole pine) are serious problems on much of the Reservation. Permanent growth plot data show that one of every four host trees is visibly infected with dwarf mistletoe. However, the level of infection varies in individual stands. Some stands have no infected trees while in others, virtually all trees are infected.

The major effect of dwarf mistletoe infection is growth reduction. Some mortality occurs, especially when heavily infected trees are attacked by insects. Heavily infected trees produce smaller cone crops and seeds of lower viability than healthy trees. Wood quality and log grades are adversely affected by stem infections.

Growth impacts in the 110,000 acres of cut-over Douglas-fir and western larch stands is significant. These semi-managed stands have had most severely infected trees removed in earlier harvests, but permenant growth plots continue to indicate an annual board foot loss of 1.9 MMBF, or 17.3 BF/acre, annually. (Dooling and Haglund 1980) Annual losses probably exceed this figure for uncut Douglas-fir and western larch and all lodgepole pine stands. A conservative estimate of total growth loss on the Reservation exceeds 3 MMBF per year (Dooling and Haglund 1980).

In selectively cut areas, the objective should be removal of all susceptible species where infestations occur. The effect of the treatment is species eradication for one cutting cycle. Remaining non-host species would be thinned while understory host species are eliminated. Species eradication can be avoided where understory trees are less than four feet tall or less than ten years old and show no signs of infection. In this case susceptible species could be left if needed for stocking.

Trees left for seed and shelter in evenage regeneration cuts should also be disease free. Some lightly infected seedtrees may have to be left. This is acceptable if infected trees are removed before regeneration is four feet tall or ten years old, whichever occurs first. This delay is possible because seedlings present small targets for dwarf mistletoe seeds to hit and the likelihood of infection is small. The removal of the seedtrees can be subsidized by FPM funds. This is true at present, but the goal is to avoid creating situations requiring expenditure of FPM funds in the future.

Reduction of dwarf mistletoe impact through normal silvicultural practices is biologically sound, but costs are usually higher when dwarf mistletoe must be considered, and additional funding to cover these costs is often required. Within the guidelines covered later in the use of funds section, forest pest management funds should be used to meet these additional costs.

USE OF FOREST PEST MANAGEMENT FUNDS

Forest Service and Bureau of Indian Affairs personnel have met several times to discuss the proportionate share of FPM money, Federal Add-on money, and Tribal funds which should be allocated for the dwarf mistletoe program. Suggested levels of FPM funding for different program activities follow.

PRE-SUPPRESSION SURVEYS

Forest Pest Management funds should pay the entire cost of dwarf mistletoe surveys in areas not included in sale packages, and in sale areas where additional plots are needed to define more clearly the dwarf mistletoe treatment necessity.

POST-SUPPRESSION SURVEYS

Forest Pest Management funds should pay the entire cost of these surveys following treatment to determine if the prescription was accurate and if the desired job was done.

SUPPRESSION ACTIVITIES

First priority, Stands with a merchantable overstory removed by a timber sale and with a understory that needs treatment qualify for a maximum of 50 per cent FPM funding. Stands with an unmerchantable, infested overstory and an understory that needs treatment qualify for 100 per cent FPM funding for overstory removal and a maximum of 50 per cent funding for understory thinning and removal of susceptible species. 'Unmerchantable stands' is defined as those stands which are unsalable under competitive bidding with no minimum prices set.

Second priority, Stands which have an understory and overstory which are only lightly infested with dwarf mistletoe will be targeted for unevenage management. These stands will be treated by removing host species from the overstory and slashing susceptible species from the understory and thinning non-host species to control stocking levels. These stands qualify for a maximum of 50 per cent FPM funding for understory treatment. Use of FPM funds is limited to two stand entries, one for overstory removal and one for species eradication in the understory. If a third treatment is needed, other funding must be used.

Third priority, Stands needing rehabilitation which are not part

of a timber sale qualify for FPM funding as follows:

> Where the overstory cannot be sold because of low volumes or poor tree quality, 100 per cent of the cost of felling infested overstory and slashing the understory may be funded by FPM funds.
>
> Where a purchaser is required to take only the logs, and the sale can bear only minimal follow-up treatment costs because of low merchantable volumes and values, a maximum of 75 per cent of the cost of understory slashing may be funded by FPM funds.

Fourth priority - Stands which consist of evenage blocks which have been planted or naturally regenerated to host species but are surrounded by a seed wall of infested trees, may also be treated. A buffer strip of one chain into the block will be thinned to remove all susceptible species, and prevent the spread of dwarf mistletoe into the block. FPM funds will pay for a maximum of 50 per cent of this thinning.

Limitations on use of funds - FPM funds are for felling infected trees only. All skidding,slash disposal, site preparation and planting must be paid for from other funds.

PROGRAM COSTS

Average total cost of mistletoe control work on the Reservation is estimated at between $75 and $90 per acre, with costs varying from year to year. In general, activities which eliminate susceptible species, like slashing, are funded 100 per cent by FPM funds. Activities which benefit the residual stand, like thinning where susceptible species are removed and non-host species are spaced, are funded at 50 per cent with FPM funds. In selected areas needing rehabilitation, scattered merchantable tree felling is estimated to cost an additional $24 per acre. The estimated costs of pre-and post-suppression surveys is $6 per acre. Annual budget estimates will reflect actual costs.

The yearly budget request and project proposal will include areas and acres to be treated, the type of treatment, and the proposed funding level for each treatment category.